

Preliminary Results of a U.S. Deep South Modeling Experiment using NASA SPoRT Initialization Datasets for Operational National Weather Service Local Model Runs

Lance Wood¹, Jeffrey M. Medlin², Brad Zavodsky³ Jon Case³ and Andrew Molthan³

¹NOAA National Weather Service (NWS); Houston, TX

²NOAA National Weather Service; Mobile, AL

³NASA Short-term Prediction Research and Transition (SPoRT) Center/ENSCO Inc.; Huntsville, AL

A joint collaborative modeling effort among the NWS offices in Mobile, AL, and Houston, TX, and NASA' Short-term Prediction Research and Transition (SPoRT) Center began during the 2011-2012 cold season, and continued into the 2012 warm season. The focus was on two frequent U.S. Deep South forecast challenges: the initiation of deep convection during the warm season; and heavy precipitation during the cold season. We wanted to examine the impact of certain NASA produced products on the Weather Research and Forecasting Environmental Modeling System in improving the model representation of mesoscale boundaries such as the local sea-, bay- and land-breezes (which often leads to warm season convective initiation); and improving the model representation of slow moving, or quasi-stationary frontal boundaries (which focus cold season storm cell training and heavy precipitation). The NASA products were: the 4-km Land Information System, a 1-km sea surface temperature analysis, and a 4-km greenness vegetation fraction analysis. Similar domains were established over the southeast Texas and Alabama coastlines, each with an outer grid with a 9 km spacing and an inner nest with a 3 km grid spacing. The model was run at each NWS office once per day out to 24 hours from 0600 UTC, using the NCEP Global Forecast System for initial and boundary conditions. Control runs without the NASA products were made at the NASA SPoRT Center. The NCAR Model Evaluation Tools verification package was used to evaluate both the positive and negative impacts of the NASA products on the model forecasts. Select case studies will be presented to highlight the influence of the products.